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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/740,103	12/18/2000	Erik W. Jensen	884.386US1	5261

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12/03/2001

Schwegman, Lundberg
Woessner & Kluth, P.A.
P.O. BOX 2938
Minneapolis, MN 55402

EXAMINER

ALCALA, JOSE H

ART UNIT

PAPER NUMBER

2841

DATE MAILED: 12/03/2001

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/740,103

Applicant(s)

JENSEN, ERIK W.

Examiner

Jose H Alcalá

Art Unit

2841

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 September 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) 6-15 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 December 2000 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Group 1, Species 1 in Paper No. 3 is acknowledged.
2. During a telephone conversation with Danny Padys on 11/15/01 the proper response to the Election of Species was completed, and a provisional election was made without traverse to prosecute the invention of Group 1, Species 1, claims 1-5. Affirmation of this election must be made by applicant in replying to this Office action. Claims 6-15 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Drawings

3. The drawings are objected to because segments 110 and 112 are not finished, making the figure unclear regarding how the conductive segments come in contact with the vias 104 and 105. In addition it is not clear why the perimeter of the vias 104 and 105 is drawn using a dotted line, are the vias under the substrate 101 or going through the substrate. Correction is required.

Specification

4. The disclosure is objected to because of the following informalities: In Page 3, line 20 change from "some embodiments" to --one embodiment--.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 1-5 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential elements, such omission amounting to a gap between the elements. See MPEP § 2172.01. The omitted elements are: the substrate where the vias are located, since the vias cannot exist by themselves without a substrate.

Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The omitted structural cooperative relationships are: how the vias are coupled to the pad, and how the pad is located regarding the substrate where the vias are located. For the purpose of examining on the merits, the vias are assumed to be directly under the pad, thus being directly coupled to the pad.

Claim 2 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential elements, such omission amounting to a gap between the elements. See MPEP § 2172.01. The omitted elements are: the coupling method between the pad and the at least one via that is **not** substantially beneath the pad. For this via to be connected to the pad, there must be a coupling device between them.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

8. Claims 1-3 are rejected under 35 U.S.C. 102(e) as being anticipated by Fasano et al. (US Patent No. 6,312,791). As best understood by the examiner:

Regarding Claim 1, Fasano teaches an interconnect (Reference number 140) comprising: a pad (Reference number 124); and at least two vias (Reference number 112) coupled to the pad.

Regarding Claim 2, Fasano teaches that at least one of the at least two vias is formed substantially beneath the pad (Reference number 112 under the pad in Fig. 3E).

Regarding Claim 3, Fasano teaches that at least one of the at least two vias is coupled to the pad by a conductive segment (Reference number 114) having a first end (Bottom of Reference number 114) having a first width and a second end (Top of Reference number 114) having a second width, the first end being connected to the at least one of the at least two vias and the second end being connected to the pad, and the first width being less than the second width. See Figure 3E.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fasano et al. (US Patent No. 6,312,791). As best understood by the examiner:

Regarding Claim 4, Fasano teaches all the elements of the instant claimed invention as stated supra for Claim 2, and the limitation of Claim 4 that there can be three vias (See Figure 3E). In addition, Fasano teaches in column 5, line 23, that the vias are arranged in order to allow as many vias as will fit under the area of the pad, but fails to explicitly teach that the pad has at least five substantially straight edges and that only two of the three vias are coupled to the substantially straight edges. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Fasano reference in order to make the pad having at least five substantially straight edges or any other polygonal configuration, thus reducing the use of pad material, saving money and making sure that only the desired vias are under the pad. In addition, that would have involved a mere change in the shape of the component which would be generally recognized as being within the level of ordinary skill in the art. See *In re Dailey*, 149 USPQ 402 (CCPA 1976).

It would have been further obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of Fasano in order to have only two of

the three vias to be coupled to the substantially straight edges, thus reducing even more the amount of material needed to manufacture the pad by coupling the vias exactly to the substantially straight edges, leaving outside the vias that are not desired to be coupled to the pad.

Regarding Claim 5, Fasano fails to teach that at least one of the only two of the three vias coupled to the substantially straight edges is coupled to one of the substantially straight edges through a tapered conductive segment. It would be inherent from the modification of the Fasano reference rejecting Claim 4 that since the method used to couple the pad to the vias is through a tapered conductive segment, at least one of the only two of the three vias coupled to the substantially straight edges is coupled to one of the substantially straight edges through a tapered conductive segment.

Conclusion

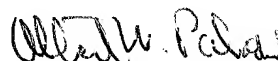
11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following references teach pads coupled to vias: Lin (US Patent No. 5,258,648), Kobayashi et al. (US Patent No. 6,040,524), Novak (US Patent No. 6,215,372) and Horiuchi et al. (US Patent No. 5,943,212). The following references teach the use of tapered conductive segments: Silvestre (US Patent No. 6,246,107), Goenka (US Patent No. 6,111,204) and Davis et al. (US Patent No. 6,046,901).

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jose H Alcala whose telephone number is (703) 305-9844. The examiner can normally be reached on Monday to Friday.

13. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jeffrey Gaffin can be reached on (703) 308-3301. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-3431 for regular communications and (703) 305-3431 for After Final communications.

14. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

JHA
November 19, 2001


ALBERT W. PALADINI
PRIMARY EXAMINER